

### **In the Claims**

Claim 1 (currently amended): A process for the simultaneous production of xylitol and ethanol from a hydrolyzed lignocellulose-containing material, comprising providing a starting material of ~~the~~ hydrolyzed lignocellulose-containing material, comprising xylose and glucose in aqueous solution, wherein xylose content is 50-300 g/l; fermenting said starting material with a yeast strain which is capable of converting xylose to xylitol and glucose present to ethanol to form a fermented product comprising xylitol, ethanol and yeast, wherein during fermentation ~~at least 50% of the xylose in the starting material is converted to xylitol and the glucose in the starting material is converted to ethanol and at least 20~~ 22.3 g/l of ethanol is produced in the fermentation solution;

recovering the resulting ethanol by distillation of the fermentation solution to obtain a distillate with ethanol and a remaining solution; and

recovering xylitol from the remaining solution by chromatographic separation.

Claim 2 (cancelled)

Claim 3 (currently amended): The process according to Claim 1, wherein ~~said~~ lignocellulose-containing material hydrolyzed is birch or grain hulls.

Claim 4 (cancelled)

Claim 5 (previously amended): The process according to Claim 1, further comprising crystallizing pure xylitol.

Claim 6 (currently amended): The process according to Claim 1, wherein ~~the~~ yeast cells are removed prior or subsequent to the distillation.

Claim 7 (previously amended): The process according to Claim 1 wherein the yeast strain is of the genus *Candida* or *Debaryomyces*.

Claim 8 (currently amended): The process according to Claim 1, wherein the yeast is a *Candida tropicalis* species.

Claim 9 (currently amended): The process according to Claim 1, wherein the yeast is ~~of the species~~ *Debaryomyces hansenii*.

Claim 10 (cancelled)

Claim 11 (currently amended): The process according to Claim 1, wherein the hydrolyzed lignocellulose-containing material is ~~hydrolyzed~~ produced by steam explosion and enzymatic hydrolysis of lignocellulose-containing material.

Claim 12 (previously amended): The process according to Claim 1, wherein the chromatographic separation is carried out with a strong cation-exchanging resin as a stationary phase.

Claim 13 (previously amended): The process according to Claim 1 wherein the fermentation is carried out at a pH of about 4 – 7.

Claim 14 (Cancelled)

Claim 15 (previously added): The process according to claim 8, wherein the yeast is *Candida tropicalis* ATCC 9968.

Claim 16 (previously added): The process according to Claim 13, wherein the fermentation is carried out at a pH of about 5.7 and at a temperature of about 25 - 35°C.

Claims 17-18 (Cancelled)

Claim 19 (currently amended): The process according to claim 1, wherein the hydrolyzed lignocellulose-containing material is produced by a hydrolysis ~~is carried out by the~~ process selected from the group consisting of acid hydrolysis, enzymatic hydrolysis ~~or and combinations~~ a combination thereof.

Claim 20 (previously amended): The process according to claim 19, wherein hydrolysis is carried out by acid hydrolysis.

Claim 21 (previously amended): The process according to Claim 1 wherein the lignocellulose-containing material is treated by steam explosion followed by hydrolysis.

Claim 22 (Cancelled)

Claim 23 (currently amended): A process for the simultaneous production of xylitol and ethanol from a hydrolyzed lignocellulose-containing material, wherein ~~the~~ lignocellulose-containing material hydrolyzed is selected from the group consisting of softwood, birch, beech, poplar, alder, plants, plant constituents, straw, hulls of wheat, corn, oat, barley, corn cobs, corn stems, nutshells, bagasse, cottonseed bran, wood chips, sawdust, sulphite spent liquor from woodpulp processing, waste from paper processing, and waste from woodpulp processing, comprising:

providing a starting material of ~~the~~ hydrolyzed lignocellulose-containing material comprising xylose and glucose in aqueous solution, wherein xylose content is 50-300 g/l;

fermenting said starting material to produce a fermented solution with a yeast capable of converting xylose present in the starting material to xylitol and glucose present in the starting material to ethanol, said yeast selected from the group consisting of a yeast of the genera *Candida*, *Pichia*, *Pachysolen*, and *Debaryomyces*, said fermenting comprising reducing said xylose to xylitol and said glucose to ethanol, and said fermented solution comprising xylitol, ethanol, and spent yeast; wherein during fermentation ~~at least 50% of~~ the xylose in the starting material is converted to xylitol

glucose in the starting material is converted to ethanol and at least ~~20~~ 22.3 g/l of ethanol is produced into the fermentation solution;

separating a substantial portion of said spent yeast from said fermented solution to produce a substantially clarified solution comprising ethanol and xylitol, said clarified solution comprising substantially less spent yeast by weight on a dry solids (substance) basis than said spent yeast in said fermented solution, and said separating comprising at least one separating method selected from group consisting of filtration, centrifugation and decanting;

recovering ethanol by distillation to obtain a distillate with ethanol and a remaining solution;

recovering xylitol from the remaining solution by chromatographic separation; and

crystallizing said xylitol to produce xylitol crystals.

Claim 24 (currently amended): A method according to Claim 23 wherein hydrolysis to produce lignocellulose-containing material comprises at least one of the following: i) prehydrolysis of said lignocellulose-containing material by steam explosion of said lignocellulose-containing material and enzymatic hydrolysis of said lignocellulose-containing material with enzymes having a cellulolytic and xylanolytic activity to hydrolyze said lignocellulose-containing material; and ii) acid hydrolysis of said lignocellulose-containing material.

Claim 25 (previously added): A method according to Claim 23 including removing solids comprising lignin from said fermented solution.

Claim 26 (currently amended): A method according to Claim 23 wherein said yeast is selected from the group consisting of ~~genera~~ *Candida tropicalis* strain having an accession number ATCC 9968, and *Debaryomyces hansenii*.

Claim 27 (previously added): A method according to Claim 23 wherein fermenting occurs at a temperature ranging from about 10 to about 45 degrees C at a pH

ranging from 4 to 7 with a yeast concentration of about 1 to about 20 g of dry yeast per liter of solution having a xylose content of about 50 to about 300 g/l for about 24 to about 72 hours in the presence of nutrients.

Claim 28 (previously amended): A method according to Claim 23 wherein said crystallizing is selected from the group consisting of cooling crystallizing and evaporation crystallizing.

Claim 29 (previously added): A method according to Claim 23 wherein said xylitol crystals are separated by centrifugation and washed with water to produce substantially pure crystalline xylitol.

Claim 30 (currently amended): A method according to Claim 23 wherein:  
said hexose in said xylose-containing ~~solution~~ starting material further comprises arabinose.

Claim 31 (currently amended): A process for the simultaneous production of xylitol and ethanol from a starting material of hydrolyzed lignocellulose-containing material comprising xylose, comprising the steps of:

partially hydrolyzing said lignocellulose-containing material;  
extracting said partially hydrolyzed lignocellulose-containing material with water to produce a xylose containing prehydrolysate and extracted mass; fermenting the xylose containing prehydrolysate to convert at least a portion of the xylose to xylitol; chromatographically separating and crystallizing said xylitol; further hydrolyzing said extracted mass to produce a hydrolysis product comprising 50-300 g/l of xylose and ~~hexose, said hexose comprising~~ glucose; fermenting the hydrolysis product to convert ~~hexoses~~ glucose to ethanol, followed by recovery of the ethanol by distillation; wherein ~~during fermentation at least 50% of the xylose in the hydrolysis product is converted to~~ xylitol is produced and the glucose in the hydrolysis product is converted to ethanol to produce at least 45 22.3 g/l of ethanol into the fermentation solution.

Claim 32 (withdrawn)

Claim 33 (withdrawn)

Claim 34 (withdrawn)

Claim 35 (new) The process according to claim 1, wherein the fermentation is carried out at a pH of about 4-7 and at a temperature of about 25-35 C with a yeast concentration of 1 to 20 g per liter of solution for 24-144 hours in the presence of nutrients.

Claim 36 (new) The process according to claim 1, wherein at least about 27.1% by weight of ethanol is recovered.

Claim 37 (new) The process according to claim 23, wherein at least about 27.1% by weight of ethanol is recovered.

Claim 38 (new) The process according to claim 31, wherein at least about 27.1% by weight of ethanol is recovered.

Claim 39 (new) The process according to claim 1, wherein at least about 20.6 g/l xylitol is produced.

Claim 40 (new) The process according to claim 23, wherein at least about 20.6 g/l xylitol is produced.

Claim 41 (new) The process according to claim 31, wherein at least about 20.6 g/l xylitol is produced.